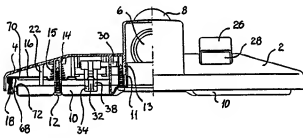
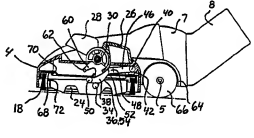




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>5</sup> :</b>  <b>A47L 9/06</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 92/09231</b>  <b>(43) International Publication Date:</b> 11 June 1992 (11.06.92)
<p><b>(21) International Application Number:</b> PCT/DK90/00300</p> <p><b>(22) International Filing Date:</b> 22 November 1990 (22.11.90)</p> <p><b>(71)(72) Applicant and Inventor:</b> PETERSEN, Georg, Vilhelm [DK/DK]; Hesselkaer 19, DK-7100 Vejle (DK).</p> <p><b>(74) Agent:</b> GREGERSEN, N., H.; Aarhus Patentkontor, Skanderborgvej 40, DK-8000 Aarhus C (DK).</p> <p><b>(81) Designated States:</b> AT, AT (European patent), AU, BE (European patent), BG, BR, CA, CH, CH (European patent), DE, DE (Utility model), DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GB, GB (European patent), GR, GR (European patent), HU, IT (European patent), JP, KP, KR, LU, LU (European patent), MC, NL, NL (European patent), NO, RO, SE, SE (European patent), SU*, US.</p>		<p><b>Published</b>  <i>With international search report.          In English translation (filed in Danish).</i></p>
<p><b>(54) Title:</b> A VACUUM CLEANER MOUTHPIECE</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> <p><b>(57) Abstract</b></p> <p>A vacuum cleaner nozzle for cleaning carpets and smooth surfaces and comprising a hood-shaped housing (4) with a central cavity (6) for a tiltable connecting part (7) and a pivotable connecting piece (8), a suction sole (10) being connected with the cavity (6), and being secured to the housing (4) at the side facing downwards, and, in the housing between this and the suction sole (10), a displaceably placed, spring affected brush holder plate (16) with brushes (18), is adapted to be raised and lowered around the suction sole (10) by means of preferably foot operated shifting pedals, said nozzle being adapted in operations to be supported on the cleaning surfaces by means of stationary wheels (66), which is placed behind the hood-shaped housing (4), has upper edge part of the suction sole (10) a such inclined pass, that the brush holder plate (16), when it is lowered and pressed against said upper edge parts of the suction sole (10), is also inclined in such a manner, that the brushes (18) along the whole circumference at the same time may rest against the cleaning surface.</p>		

# + DESIGNATIONS OF "SU"

Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

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A VACUUM CLEANER MOUTHPIECE

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The present invention relates to a vacuum cleaner nozzle for cleaning of carpets and smooth surfaces and of the type described in the introductory part of claim 1.

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From DE-A1 23 30 867 a combination nozzle of this type is known, that is with wheel, and where one single brush member by means of a foot operated shift mechanism may be raised and lowered in relation to a fixed suction sole.

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The invention has for its purpose to provide a nozzle of the type described in the introductory part, and by which by simple provisions an improved useful effect may be obtained.

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The vacuum cleaner nozzle according to the invention is distinctive in that upper edge parts of the suction sole has a such inclined pass, that the brush holder plate, when lowered and pressed against said upper edge part of the suction sole, is also inclined in such a manner, that the brushes along the whole circumference and the stationary wheels at the same time may rest against the cleaning surface, and that the brush holder plate at its underside is provided with tightening means being adapted to cooperate with said upper edge parts of the suction sole, so that it may close totally tight to the brush holder plate. By simple provisions a strong improved useful effect is obtained that the brushes at the whole circumference of the brush holder plate - at the same time as the nozzle still is supported by said wheel - may rest against the cleaning surface, as the whole hood-shaped housing by lowering of the brush holder plate against said upper inclined edge parts of the suction sole will take up a corresponding backwards/downwards inclined position in relation to the wheels.

In order to improve the useful effect of the vacuum cleaner nozzle further, expediently it may be provided so that the brush holder plate at its the underside is provided with tightening means, being adapted to cooperate with said  
5 upper edge parts of the suction sole, so that it may shut totally tight to the brush holder plate. Hereby by simple provisions a possibility to counteract, that parts of the housing above the brush holder plate are exposed to false air and eventually soiled, so that the function of the  
10 shift pedals is affected, which is an ordinary problem by known vacuum cleaner nozzles of the said kind, where it from time to time is necessary to dismount the suction sole in order to maintain the shift mechanism by cleaning the nozzle.

15 Preferably said tightening means at the underside of the brush holder plate are placed just inside the brushes and preferably stretching along the whole circumference of the brush holder plate.

20 In the following the invention is described in more details with reference to the drawing, in which:

Fig. 1 shows a view - partly in section through the shift  
25 mechanism - of an embodiment for a vacuum cleaner nozzle according to the invention,

Fig. 2 shows a side view - partly in section through the shift mechanism - of a vacuum cleaner nozzle according to  
30 the invention - shown with the brush holder plate in its raised inactive position,

Fig. 3 shows a side view - partly in section - of a vacuum cleaner nozzle according to the invention - shown with the  
35 brush holder plate in its lowered active position, and

Fig. 4 shows a side sectional view through the middle of a vacuum cleaner nozzle according to the invention - shown with the brush holder plate in its raised inactive position.

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The vacuum cleaner nozzle shown in Fig. 1 comprises a hood-shaped housing 4 with a central cavity 6 for a tiltable arranged connecting part 7 around a common wheel axle 5 and a pivotable connecting piece 8 and a suction sole 10, which  
10 by means of a integrated rectangular tube 11 fitting tight inside a corresponding rectangular tube 13 provided as a part of the housing 4, is connected with the cavity 6, and secured to the housing by screws 12, for instance being placed in vertical supports 14, which lead through circular  
15 openings in a displaceable brush holder plate 16 with brushes 18, said brush holder plate being adapted to be raised and lowered around the suction sole 10 between a raised inactive position (Fig. 2) and a lowered active position (Fig. 3).

20

Springs 15 are mounted between the housing 4 and the brush holder plate 16, and these springs are placed around the supports 14 at opposite ends of the nozzle 2 and the brush holder plate 16, respectively, and affect the latter with a  
25 permanent downwards directed spring effect. The suction sole 10, which as mentioned is secured to the supports 14, are also supported at the bottom of the housing 4 by further supports 22, lower ends of which are resting against the upperside of the suction sole 10 on level with longitudinal suction channels 24 being connected with the central  
30 cavity 6.

The vacuum cleaner nozzle 2 is provided with a shift mechanism for the brush holder plate 16, which in a known manner  
35 is operated by cooperating foot pedals 26, 28 being connected with an along the housing arranged common crank-like

axle 30. The latter is provided with projecting swing arms 32 at opposite ends of the nozzle, which arms 37 in a distance from the axle 30 are provided with a two-sided projecting activation members in form of a cylindrical cross-  
5 beam 34 adapted to engage with arched underside members 36 of separate lifting arms 38 as shown. These arms 38 are at an end provided with a transverse, cylindrical bearing member 40, which is pivotally arranged between bearing console members 42 inside the housing 4. The lifting arms 38 are  
10 two-sided, as the bearing member 40 just inside the opposite end parts 44 has two arm parts 46, which with mutual distance are stretching inwards towards the middle of the nozzle 2, as the arm parts 46 via opposite offsets 48 continue inwards with less mutual distance to a transverse end  
15 part 50 projecting to both sides of the arm parts 46. These are at undersides 52 from the offsets 48 and some distance towards the end parts 50 provided with downwards/outwards arched engagement surfaces 54 against which the crossbeams 34 of the swing arms 32 are adapted to be guided for raising and lowering the lifting arms 38, respectively, as the crossbeams of the swing arms are adapted to be inserted between the arm parts 46 behind the offsets 48 for cooperation with the arched engagement surfaces 54 thereof in front of the offsets 48, where the mutual distance between  
20 the arm parts 46 is adjusted to the width of the swing arms 32 within the crossbeams 34.

The swing arms 32 are in a distance within the crossbeams 34 provided with a therefrom projecting arm 60 at the same  
30 level as the swing arm 32, which arm 60 with an end part 62 is adapted to form an upper stop for the brush holder plate 16, that is in practice for the transverse end parts 50 of the lifting arms 38, when the brush holder plate 16 takes up its lowered active position (Fig. 3), where the cross-  
35 beams 34 of the swing arms 32 do not engage with the arched engagement surfaces 54 of the lifting arms 38, as the swing

arms 32 by means of a spring device 25, which affects the crank-like axle 30 against one of the two possible outer positions (A and B, Fig. 4), is fixed in a such position.

5 At the backside of the hood-shaped housing 4 a wheel 66 is placed in a housing part 64, which serves to support the nozzle 2 in the shown situations of use (Fig. 2 and 3). The brush holder plate 16 is just inside the brushes 18 provided with a surrounding tightening member 68 with a projecting tightening lip 70. The suction sole 10 is at its top side, that is at the side facing the brush holder plate 16, provided with an inclined pass in such a manner, preferably by a integrated edge member of plastic 72, that the suction sole 10 has the maximum height closest at the wheels 66, 15 and that the suction sole 10 in principle is placed permanently in the housing 4, that upper edge parts 72 of the suction sole 10 may cooperate with the tightening member 68 inside its tightening lip 70, when the brush holder plate 16 is allowed to be lowered against the upper edge parts 72 20 of the suction sole 10, so that this may close tightly to the brush holder plate 16.

## C L A I M S :

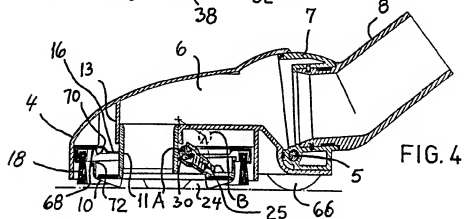
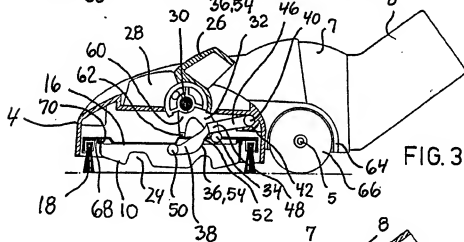
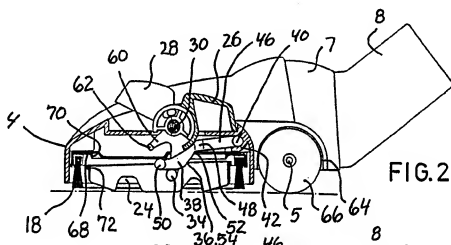
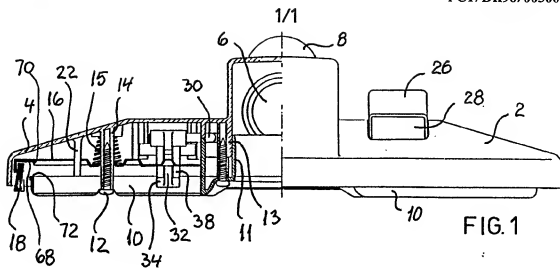
1. A vacuum cleaner nozzle for cleaning carpets and smooth surfaces and comprising a hood-shaped housing (4) with a central cavity (6) for a tiltable connecting part (7) and a  
5 pivotable connecting piece (8), a suction sole (10) being connected with the cavity (6), and being secured to the housing (4) at the side facing downwards, and a in the housing between this and the suction sole (10) displaceably placed, spring affected brush holder plate (16) with brushes (18), being adapted to be raised and lowered around the suction sole (10) by means of preferably foot operated shifting pedals, said nozzle being adapted in operations to be supported on the cleaning surfaces by means of the suction sole (10) or the brushes of the brush holder plate and  
15 of stationary wheels (66), which is placed behind the hood-shaped housing (4) in such a manner, that the wheel axles form a floor supported pivoting link for the nozzle in general, c h a r a c t e r i z e d in that an upper edge part of the suction sole (10) has a such inclined pass,  
20 that the brush holder plate (16), when lowered and pressed against said upper edge part of the suction sole (10), is also inclined in such a manner, that the brushes (18) along the whole circumference and the stationary wheels at the same time may rest against the cleaning surface, and that  
25 the brush holder plate (16) at its underside is provided with tightening means (68, 70) being adapted to cooperate with said upper edge parts (72) of the suction sole (10), so that it may close totally tight to the brush holder plate (16).

30

2. Vacuum cleaner nozzle according to claim 1, c h a r a c t e r i z e d in that said tightening means (68, 70) at the underside of the brush holder plate (16) are placed just inside the brushes (18) and stretching along the whole circumference of the brush holder plate (16).

35





# INTERNATIONAL SEARCH REPORT

International Application No PCT/DK 90/00300

## I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)<sup>5</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: A 47 L 9/06

## II. FIELDS SEARCHED

Minimum Documentation Searched<sup>7</sup>

Classification System

Classification Symbols

IPC5

A 47 L

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in Fields Searched<sup>8</sup>

SE,DK,FI,NO classes as above

## III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup>

Category *	Citation of Document <sup>11</sup> with Indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
Y	US, A, 3013294 (E. OSTROM) 19 December 1961, see column 3, line 14 - line 32 --	1-2
Y	US, A, 3040368 (N.H. NILSSON) 26 June 1962, see column 3, line 3 - line 12 --	1-2
Y	CH, A, 524351 (HANS WESSEL) 15 August 1972, see figures 3-6 --	1,2
Y	EP, A1, 0125994 (ETABLISSEMENTS GEORGES OLIVIER) 21 November 1984, see figures 1,2 --	1,2
Y	EP, A1, 0382598 (ETABLISSEMENTS GEORGES OLIVIER) 16 August 1990, see figures 3,4,7 -- -----	1,2

\* Special categories of cited documents:<sup>10</sup>

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## IV. CERTIFICATION

Date of the Actual Completion of the International Search

10th June 1991

Date of Mailing of this International Search Report

1991 -06- 25

International Searching Authority

Signature of Authorized Officer

SWEDISH PATENT OFFICE

Björn Kallstenius

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on 91-04-30.  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3013294	61-12-19	NONE	
US-A- 3040368	62-06-26	CH-A- 377497	00-00-00
		DE-B- 1193212	00-00-00
		FR-A- 1235128	00-00-00
		GB-A- 881594	00-00-00
		NL-C- 120175	00-00-00
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		FR-A-B- 2546054	84-11-23
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